

ISAAC HENRY BURKILL 1870-1965

by

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Volume XVII, part 3, of this *Bulletin* was published on May 18th 1960, to commemorate the 90th birthday of Isaac Henry Burkill, Director of Gardens, Straits Settlements, from 1912 to 1925. Mr. Burkill died on March 8th 1965, thus having almost attained the age of 95 years. In 1960 Dr. H. Santapau gave details of Mr. Burkill's early life and of his service in India before he came to Singapore, and Dr. C. X. Furtado and I collaborated in an account of his work in Singapore. The following is to be regarded as supplementing these earlier statements.

Mr. Burkill's early work as assistant in the University Herbarium at Cambridge had trained him as a field botanist in the careful recording of much detailed observation, especially regarding the relations between flowers and insects. His work at Kew had first introduced him to tropical floras and then to an interest in useful tropical plants. In India he was officially engaged in collecting information about useful plants, and during his many travels for this purpose he took every opportunity to extend to Indian plants his investigations of floral biology. He also began the detailed study of wild and cultivated species of *Dioscorea* (true yams) which he continued almost to the end of his long life. Thus he came to Singapore with considerable experience as a field botanist, with an extensive knowledge of the plants of tropical Asia, especially those of use to man, and with a particular interest in yams and in floral biology.

Burkill arrived at Singapore several months after the retirement of H. N. Ridley, that dynamic and erratic pioneer genius who accomplished so much in 23 years, during which period the plantation rubber industry was established, largely as a result of his experiments with the *Hevea* trees in Singapore. Ridley was always in a hurry and often uncritically careless about details. Thus Burkill found much reorganization necessary in every aspect of the work of the Botanic Gardens. In his efforts to achieve reorganization he was hampered by lack of trained assistants, especially during the period of World War I; he was also hampered by a failure of the senior civil servants of his day to understand the significance and needs of the work of the Botanic Gardens. But despite these difficulties he did achieve important developments which had a great influence both on the Gardens Department and, through his published work, on many people throughout the world who have been concerned with useful tropical plants.

During the period between Ridley's departure and Burkill's arrival, J. W. Anderson, Assistant Curator, prepared and had printed a catalogue of the plants in cultivation in the Gardens. This contained too many errors to satisfy Burkill's critical examination, but it showed the need for carefully compiled records of the plants which had been introduced and of their behaviour in cultivation. Burkill therefore had prepared a complete series of extracts from the plant introduction books, thus obtaining a list of all names under which plants had been introduced, with their sources and the date of each record. He also had herbarium specimens prepared of plants in cultivation, and himself checked their names, attempting thus to compile a complete record of the actual state of the Gardens for comparison with the introduction records. This survey included all the useful plants which has been introduced into the Economic Garden (now the site of the Faculties of Arts and Science of the University of Singapore). He also reorganized the labelling of plants (especially trees, shrubs and palms) and every week checked the painted labels before they were put out. He thus trained Malay youths to have a knowledge of botanical plant names and also to recognize the plants which bore them and to know their places in the Gardens. Among these Malays was a very promising young man named Mohamed Nur.

The herbarium, and field work for collecting new specimens, also needed reorganization. Ridley's methods had been casual, and in some cases resulted in confusions of labelling. Burkill therefore devised a new system of field labels, based on his Indian experience, and trained his staff in the importance of labelling all specimens at the time of collections. Needing a new assistant in the herbarium, he promoted Mohamed Nur, who subsequently made such a great contribution to this aspect of the Gardens' work. Burkill collected specimens during his travels wherever possible, and also arranged for other members of the staff to do so, sending duplicates to Kew, where they were available to Ridley, who was preparing his *Flora of the Malay Peninsula*. As the successive volumes of this *Flora* appeared, the herbarium was re-arranged, and Burkill took the opportunity of making a careful survey of the extent of botanical exploration of the various parts of the Peninsula (*Gard. Bull.* 4: 113–202, 1927). He also made careful analyses of the floras of two restricted localities in which he had himself made extensive collections, namely Fraser's Hill (with R. E. Holttum, *Gard. Bull.* 3: 19–110, 1923) and Taiping (with M. R. Henderson, *Gard. Bull.* 3: 303–458, 1925); these accounts give an indication of his critically detailed treatment of his data, and also the wide scope of his thought.

He made a special effort to secure herbarium specimens of wild and cultivated yams, and also cultivated living plants whenever possible, to observe their growth both above and below ground. He cultivated many yams from other parts of the world, notably a collection from Tahiti. He had collected local names for yams in

India, and continued this practice in Malaya; he searched a very wide range of literature for other recorded vernacular names, the final list being more than 1500. His published commentary on the list throws light on the migrations of man and on the history of the use of yams as food; it also points out the value of such records in linguistic studies.

On the subject of floral biology, Burkill was not able to publish much, apart from studies of various Malayan orchids in cultivation; these included the very remarkable *Plocoglottis lowii*. It was however clear to anyone accompanying him in the field (as I did on several occasions during the years 1922–25) how deep was his interest in such matters and how wide his knowledge.

Throughout his service in Singapore, Burkill was in close contact with the Forest Department, and from 1918, when Dr. F. W. Foxworthy was appointed to establish a Forest Research service, this contact became closer, as Foxworthy needed frequently to consult the Singapore Herbarium. Mr. G. E. S. Cubitt, head of the Forest Department, hearing of Burkill's accumulated records of useful plants and their history in culture in Singapore, and knowing also his work in connection with the preparation of Watt's *Dictionary of the Commercial Products of India*, suggested to the Governor of the Straits Settlements that Burkill should spend the years following his retirement in compiling such a dictionary for Malaya. This proposal was approved, and in his last two years of service Burkill spent as much time as he could in collecting data for the Dictionary in various part of Malaya. In this work he was assisted by Mohamed Haniff of Penang. They collected especially information about local medical uses of plants, and in so doing also collected a large amount of information on local plant-name. The results of this work were published in *Gard. Bull.*, 6 (2), 1930.

It had been suggested that the Dictionary would be completed in the three years following Burkill's retirement. But he spent the whole of those years searching literature, at Kew and elsewhere, and accumulated a card-index which he told me contained 36,000 entries; only then did he begin the writing. The work was finally published in 1935, ten years after its commencement. It is the most comprehensive account of useful tropical plants, and of the history of their use by man, that has yet been published. Naturally, it is now not up to date in many matters, but as a basis of fact about the past it will always be of great value.

This great work accomplished, Burkill reverted to his interest in yams, and (in collaboration with Sir David Prain) completed the text of a great monograph on the oriental species of *Dioscorea* (*Annals of the Royal Botanic Garden, Calcutta*, 14, 1936–38). He extended his studies to African yams, and devoted much time also to basic studies on the anatomy and morphology of *Dioscorea* and the other genera of the yam family. At the age of 81 he completed an account of the family Dioscoreaceae for *Flora Malesiana*. Finally, at the age of 90, he completed a remarkable survey of the whole family, treating it from many viewpoints (*Journ. Linn. Soc. Bot.* 56: 319–412, 1960).

The historical studies on which the Dictionary was based, and those on the dispersal and uses of yams, led Burkill to a general interest in the history of food plants and so to a wide reading of literature on early human history and pre-history. In his usual way he accumulated a large number of reference slips dealing with all aspects of this subject, and used them in preparing his Hooker Lecture to the Linnean Society in 1951 on "Habits of Man and the origins of the cultivated plants of the Old World". He had thoughts of expanding this study into a book, but was obliged to give up the idea.

About 1950 Burkill was asked if he would write something on the history of botany in India, a subject on which he had already a wide knowledge. He set about the work with his usual thoroughness, and went to much trouble in searching for biographical details from many sources. His last visit to Kew was in connection with this work, which was interrupted by a serious illness, after which he received much help from his wife in bringing this final labour to a conclusion. It was published, as "Chapters on the History of Botany in India", in the *Journal of the Bombay Natural History Society*, from 1953 to 1963, and is now re-published in book form by the Botanical Survey of India.